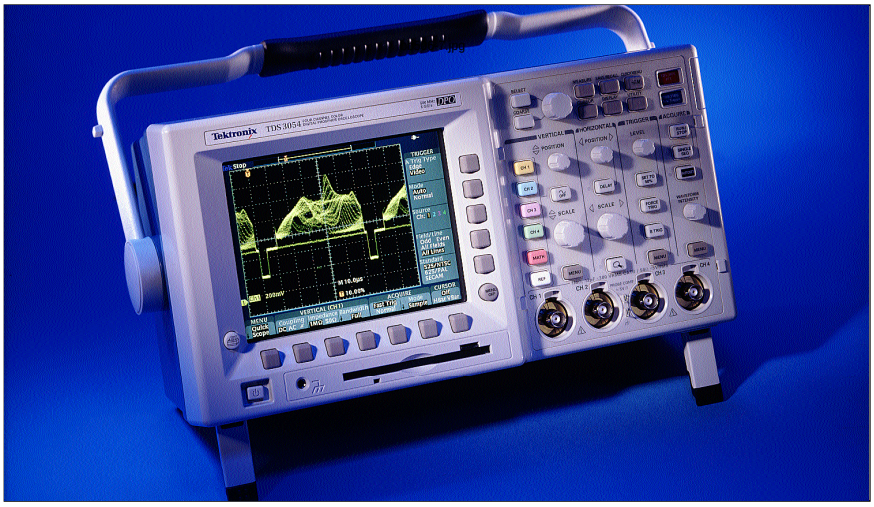
TDS3000 Series
Digital Phosphor Oscilloscopes



500 MHz, 300 MHz, and 100 MHz Bandwidths

Sample Rates up to 5 GS/s

2 or 4 Channels

Full VGA Color LCD on all Models

Built-in Floppy Disk Drive For Easy Storage and Documentation

Centronics Port Standard on all Models for Quick, Convenient Hardcopies

9-Bit Vertical Resolution

Multi-Language User Interface

QuickMenu User Interface Mode for Quick, Easy Operation

Optional Modules for RS-232, GPIB, or VGA Communication Ports

Connection to Local Area Network with AD007 GPIB to LAN Adapter

Advanced Triggers, such as, Glitch, Width, and Logic Standard on 4 Channel Models

Fast Fourier Transform (FFT) for Frequency and Harmonic Analysis Standard on 4 Channel Models

Extended Video Application Module, Provides Features, such as Custom Video Trigger, Line Count Trigger and NTSC, PAL, SECAM Display Graticules

Support for Active Probes, Differential Probes, and Current Probes that Provide Automatic Scaling and Units

Optional Battery Power for Convenient Use in the Field or Away from the Bench

The TDS3000 Series of Digital Phosphor Oscilloscopes

The TDS3000 oscilloscopes are the lowest priced, most portable Digital Phosphor Oscilloscopes (DPOs). Now every design engineer and technician can take advantage of the tremendous benefits of DPOs. DPOs deliver a new level of insight that makes dealing with complex signals simple. DPOs display, store, and analyze, in real-time three dimensions of signal information: amplitude, time, and distribution of amplitude over time.

Benefits of DPO

DPOs have an intensity graded color display that provides information about the frequency of occurrence of signal amplitudes and widths. This helps the user locate and characterize waveform anomalies that can be elusive on traditional Digital Storage Oscilloscopes. The fast update rate of DPOs also makes it easier to capture and display infrequent waveforms or waveform variations.

Flexible Features for Every Application

The portable form factor allows the instrument to go wherever it is needed. The Communication and Application Modules enable the instrument to be configured for specific applications or upgraded without returning it to the manufacturer. The TekProbe® Level II interface provides power to a range of application specific accessories.

Quick to Learn and Quick to Use

The TDS3000 Series graphical user interface offers a new operating mode called QuickMenu. This quick access user interface makes the main oscilloscope controls accessible with a push of a single button. Included with every scope is an On-Line Tour disk that runs in the oscilloscope. This disk gives an overview of the product's operation and capabilities.

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TDS3000 Series Electrical Characteristics

	TDS3012	TDS3032	TDS3052	TDS3014	TDS3034	TDS3054
Bandwidth	100 MHz	300 MHz	500 MHz	100 MHz	300 MHz	500 MHz
Channels	2	2	2	4	4	4
Sample Rate on Each Channel	1.25 GS/s	2.5 GS/s	5 GS/s	1.25 GS/s	2.5 GS/s	5 GS/s
Maximum Record Length	10K points on all models					
Vertical Resolution	9-bits on all models					
Vertical Sensitivity (/div)	1 mV-10 V on all models					
Vertical Accuracy	±2% on all models					
Max Input Voltage (1 MΩ)	150V RMS CAT I on all models					
Position Range	± 5 div on all models					
BW Limit	20 MHz	20, 150 MHz	20, 150 MHz	20 MHz	20, 150 MHz	20, 150 MHz
Input Coupling	AC, DC, GND on all models					
Input Impedance Selections	1 MΩ in parallel with 13 pF, or 50 Ω					
Time Base:						
Range (/div)	4 ns – 10 s/div	2 ns – 10 s/div	1 ns – 10 s/div	4 ns – 10 s/div	2 ns – 10 s/div	1 ns – 10 s/div
Accuracy	200 ppm	200 ppm	200 ppm	200 ppm	200 ppm	200 ppm
Display Monitor	Color LCD					

TDS3000 Series Characteristics

ACQUISITION MODES

Peak Detect – High frequency and random glitch capture. Captures glitches as narrow as 1 ns.

Sample – Sample data only.

Envelope – Max/Min values acquired over one or more acquisitions.

Average – Waveform data from 2 to 572 (selectable) acquisitions is averaged.

Single Sequence – Use SINGLE SEQUENCE button to capture a single triggered acquisition sequence at a time.

TRIGGER SYSTEM

Main Trigger Modes – Auto (supports Roll Mode for 40 ms/div and slower), Normal.

B Trigger – Trigger after time or events.

Trigger After Time Range – 13.2 ns to 50 s.

Trigger After Events Range – 1 to 9,999,999 events.

External Trigger Input (available on TDS 30X2 only) **–** >1 MΩ in parallel with 17 pF; Max input voltage is 150V RMS.

TRIGGER TYPES

Edge – Conventional level-driven trigger. Positive or negative slope on any channel. Coupling selections: DC, noise reject, HF reject, LF reject.

Video – Trigger on all lines, odd/even, or all fields. See TDS3VID for Extended Video triggering and measurement features.

Logic – (Standard on TDS30X4, must purchase TDS3TRG for TDS30X2)
PATTERN: Specifies AND, OR, NAND, NOR when true or false for a specific time.
STATE: Any logic state. Triggerable on rising or falling edge, of a clock..

Note: Logic triggers can only be used on combinations of 2 inputs.

Pulse – (Standard on TDS30X4, must purchase TDS3TRG for TDS30X2)
WIDTH (or GLITCH): Trigger on pulse width less than, greater than, equal to, or not equal to a selectable time limit ranging from 39.6 ns to 50s.
RUNT: Trigger on a pulse that crosses one threshold but fails to cross a second threshold before crossing the first again.
SLEW RATE: Trigger on pulse edge rates that are either faster or slower than a set rate. Edges can be rising, falling, or either.

MEASUREMENT SYSTEM

Automatic Waveform Measurements – Period, Frequency, +Width,–Width, Rise Time, Fall Time, +Duty Cycle,–Duty Cycle, +Overshoot,–Overshoot, High, Low, Max, Min, Pk-Pk, Amplitude, Mean, Cycle Mean, RMS, Cycle RMS, Burst Width.
Display any four measurements from any combination of waveforms.

Thresholds – Settable in percentage or voltage.

Gating – Measurements can be gated using the screen or vertical cursors.

TDS3000 Series Characteristics

WAVEFORM PROCESSING

Deskew – Channel to channel deskew may be manually entered for better timing measurements and more accurate math waveforms.

Arithmetic Operators – Add, Subtract, Multiply, Divide.

Autoset – Single-button, automatic setup on selected input signal for vertical, horizontal, and trigger systems.

DISPLAY CHARACTERISTICS

Graticules – Full, grid, cross-hair, frame, NTSC, PAL and SECAM (with TDS3VID optional application module).

Format – YT and XY.

I/O INTERFACE

Hardcopy Port (standard) – Centronics-type parallel.

TDS3GM Communications Module –
GPIB (IEEE–488.2) Programmability: Full talk/listen modes; Control of all modes, settings, and measurements.
RS-232-C Interface Programmability: Full talk/listen modes; Control of all modes, settings, and measurements. Baud Rate up to 38,400. DB-9 male connector.
Programmer Manual: (071-0381-00).
Note: For Ethernet/LAN connection use this module with the AD007 GPIB to LAN adapter.

TDS3VM Communications Module –
VGA: Monitor output for direct display on large VGA-equipped monitors. DB-15 female connector, 31.6 kHz sync rate, EIA RS-343A compliant.
RS-232-C Interface Programmability: same as TDS3GM.
Programmer Manual: same as TDS3GM.

Note: Only one Communication Module may be installed at a time.

HARD COPY CAPABILITY

Graphics File Formats – Interleaf (.img), TIF, PCX (PC Paintbrush), BMP (Microsoft Windows), and Encapsulated Postscript (EPS).

Printer Formats – Thinkjet, Deskjet, Laserjet, Epson (9&24 pin).

ENVIRONMENTAL AND SAFETY

Temperature – +5 to +50°C (operating),–20 to +60°C (non-operating).

Humidity – 20% to 80% RH below 32°C, derate to 30% RH at 45°C (operating), 5% to 90% RH below 41°C, derate to 30% RH at 60°C (non-operating).

Altitude – to 3,000 m (operating), 15,000 m (non-operating).

Electromagnetic Compatibility – Meets or exceeds EN55011 Class A Radiated and Conducted Emissions; EN50082-1; FCC 47 CFR, Part 15, Subpart B, Class A; Australian EMC Framework; Russian GOST EMC regulations.

Safety – UL3111-1, CSA 22.2 No. 1010.1, EN 61010-1/A2:1995.

PHYSICAL CHARACTERISTICS

Instrument

Dimensions	mm	In.
Width	375.0	14.8
Height	176.0	6.9
Depth	149.0	5.9

Weight	kg	Lbs.
Instrument Only	3.2	7.0
W/ battery	5.2	11.5

Ordering Information TDS3012, TDS3014, TDS3032, TDS3034, TDS3052, TDS3054

Standard Accessories

Probes: 2 each P3010 10X passive probes (TDS3012), 4 each P3010 10X passive probes (TDS3014), 2 each P6139A 10X passive probes (TDS3032, TDS3052), 4 each P6139A 10X passive probes (TDS3034, TDS3054).

Documentation: Quick Reference Manual, User Manual, On-line Tour Disk, Front panel overlay for non-English languages.

Application Modules (TDS3014, TDS3034, TDS3054 only): TDS3FFT, TDS3TRG.

Power Cord.

Accessory Tray.

Protective Front Cover: has holder for reference manual and/or 3.5" floppy disks.

NIST-Traceable Certificate of Calibration.

Warranty Information

Three year warranty covering all labor and parts, excluding probes.

International Power Plug Options

Standard – US (161-0230-01).

Opt. A1 – Universal Euro 220V, 50 Hz (161-0104-06).

Opt. A2 – United Kingdom 240V, 50 Hz (161-0104-07).

Opt. A3 – Australia 240V, 50 Hz (161-0104-05).

Opt. A5 – Switzerland 220V, 50 Hz (161-0167-00).

Opt. A6 – Japan 3 to 2 wire adapter (013-0310-00).

International User Manuals (TDS3000 Series, TDS3FFT, TDS3TRG, TDS3VID)

Standard – English.

Opt. L1 – French.

Opt. L2 – Italian.

Opt. L3 – German.

Opt. L4 – Spanish.

Opt. L5 – Japanese.

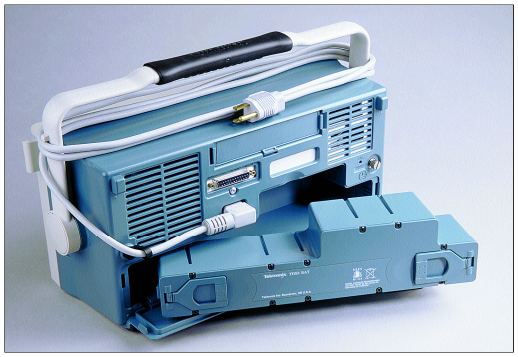
Opt. L6 – Portuguese.

Opt. L7 – Simplified Chinese.

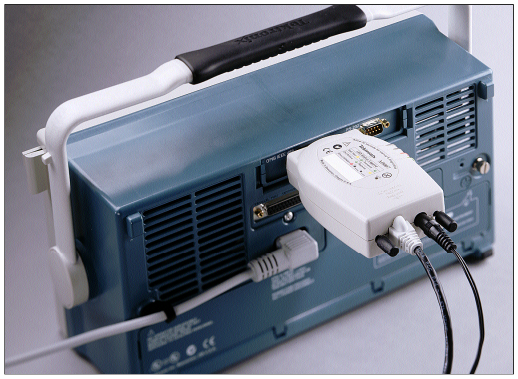
Opt. L8 – Traditional Chinese.

Opt. L9 – Korean.

Opt. LR – Russian.



TDS3BAT –Battery Pack being installed.



AD007 –GPIB to LAN adapter attached to Instrument.

TDS3FFT –Application Module being installed.

Instrument Accessories

TDS3FFT – FFT Application Module (standard on TDS30X4). Adds FFT measurement capabilities in dB or linear RMS scales. A selection of four FFT windows (Rectangular, Hamming, Hanning, and Blackman-Harris) are provided.

TDS3TRG – Advanced Trigger Application Module (standard on TDS30X4). Adds Logic and Pulse triggering described under Trigger Types (page 2).

TDS3VID – Extended Video Application Module. Adds line count triggering, custom video scan and field rates, readout in mV or IRE units, and includes 75 Ω terminator.

TDS3GM – GPIB and RS232 interfaces.

TDS3VM – VGA port and RS232 interface.

TDS3BAT – Battery pack for up to 2 hours continuous operation without line power. Note: the instrument must be grounded at all times.

TDS3CHG – Fast charger for battery pack.

AC3000 – Soft case for carrying instrument.

RM3000 – Rackmount kit.

AD007 – GPIB to LAN adapter.

Service Manual (TDS3000 Series) – English Only (071-0382-00).

TDS3GM and TDS3VM Programmers Manual – English Only (071-0381-00).

WSTRO – Software for Oscilloscopes for Windows 95/NT.

Probes

ADA400A – 100X, 10X, 1X, 0.1X High gain differential amplifier.

P6243 – 1 GHz, ≤1pF input C 10X active probe.

P6246 – 400 MHz differential probe.

P5205 – 1.3 kV, 100 MHz high voltage differential probe.

P5210 – 5.6 kV, 50 MHz high voltage differential probe.

P5100 – 2.5 kV, 100X high voltage passive probe.

TCP202 – 15 A, DC + Peak AC 50 MHz AC/DC current probe.

For further information, contact Tektronix:

Worldwide Web: for the most up-to-date product information visit our web site at: www.tektronix.com

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